CLAIMS

1. An optical device unit in which light exiting from a first optical fiber is converged by a lens to travel toward a reflection-type optical element, part or the whole of the light exiting from the first optical fiber is reflected by the reflection-type optical element and is converged by the lens to be coupled to a second optical fiber, the optical device unit being characterized in that the lens is constituted by a first and second lenses adapted to the corresponding optical fibers; the distance between the optical axes of the first and second optical fibers is larger than the distance between the optical axis centers of the first and second lenses; the light exit end of the first optical fiber, the optical axis center of the first lens and the reflection point on the reflection-type optical element are placed in line; and the reflection point on the reflection-type optical element, the optical axis center of the second lens and the entrance end of the second optical fiber are placed in line.

2. The optical device unit according to claim 1, characterized in that the optical fibers are multimode optical fibers; the light exit end of the first optical fiber and the reflection point on the reflection-type optical element are in a geometric-optical conjugate relationship with each other; and the light entrance end of the second optical fiber and the reflection point on the reflection-type optical element are also in a geometric-optical conjugate relationship with each other.

3. The optical device unit according to claim 1, characterized in that the optical fibers are singlemode optical fibers, and a beam waist of a Gaussian beam is formed at each of the light exit end of the first optical fiber, the reflection point on the reflection-type optical element and the light entrance end of the second optical fiber.

4. The optical device unit according to claim 1, characterized in that the lens has means for correcting abaxial aberration.

5. The optical device unit according to claim 4, characterized in that the means for correcting abaxial aberration has such a shape as to change the optical power along two axes of the lens perpendicular to each other.

6. The optical device unit according to claim 1, characterized in that the reflection-type optical element is one of a demultiplexing filter, a movable mirror and a photodetector.

7. An optical device characterized in that a plurality of the optical device units according to any one of claims 1 to 6 are arranged linearly or two-dimensionally one adjacent to another.

8. An optical device unit in which an optical fiber for exit and an optical fiber for entrance are placed in a pair on at least one of left and right sides of a semitransparent optical element opposite; light exiting from the optical fiber for exit on one of the left and right sides is converged by lens means; and the converged light is caused to pass through the semitransparent optical element or reflected by the semitransparent optical element to selectively be coupled to the left and right optical fibers for entrance, the optical device unit being characterized in that the lens means is constituted by a pair of lenses adapted to the pair of optical fibers for exit and entrance; the distance between the optical axes of the pair of optical fibers for exit and entrance is larger than the distance between the optical axis centers of the pair of lenses; and the light exit end or the light entrance end of each optical fiber, the optical axis center of the lens corresponding to each optical fiber and the transmission point or the reflection point on the semitransparent optical element are placed in line.

9. The optical device unit according to claim 8, characterized in that the optical fibers are multimode optical fibers; the light exit end of the optical fiber for exit and the transmission point or the reflection point on the semitransparent optical element are in a geometric-optical conjugate relationship with each other; and the light

entrance end of the optical fiber for entrance and the transmission point or the reflection point on the semitransparent optical element are also in a geometric-optical conjugate relationship with each other.

10. The optical device unit according to claim 8, characterized in that the optical fibers are singlemode optical fibers, and a beam waist of a Gaussian beam is formed at each of the light exit end of the optical fiber for exit, the transmission point or the reflection point on the semitransparent optical element and the light entrance end of the optical fiber for entrance.

11. The optical device unit according to claim 8, characterized in that the lens has means for correcting abaxial aberration.

12. The optical device unit according to claim 11, characterized in that the means for correcting abaxial aberration has such a shape as to change the optical power along two axes of the lens perpendicular to each other.

13. The optical device unit according to claim 8, characterized in that the semitransparent optical element is a demultiplexing filter or a reflection/transmission switching element such as a liquid crystal shutter.

14. An optical device characterized in that a plurality of the optical device units according to any one of claims 8 to 13 are arranged linearly or two-dimensionally one adjacent to another.

15. A microlens array having a plurality of lens portions formed on a surface of a transparent substrate, the microlens array being characterized in that two lens in the lens portions form a pair, and the lenses forming a pair have such shapes that the lenses are cut along a bisector perpendicular to a line connecting the centers of the lenses as seen in a direction along the optical axis, and the cut portions are brought into abutment on each other.